ANNUAL REPORT

ON THE

PUBLIC HEALTH

OF

GIBRALTAR,

FOR THE YEAR

1893,

BY

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ANNUAL REPORT

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PUBLIC HEALTH OF GIBRALTAR

FOR THE YEAR 1893.

VITAL STATISTICS.

Population. The total civil population of Gibraltar at the census taken on 5th April 1891 amounted to 19,100. This number comprises a so-called "fixed civil" population of 16,906 and a "resident alien" population of 2,194. The estimated population in the middle of 1893 is 19,227 according to the Registrar General's method of calculating population at intercensal periods; * but the increase is amongst the "fixed civil" population only and not amongst the "resident aliens," who remain practically the same in number. The usual tests, however, for determining increase of population are scarcely applicable in Gibraltar, in consequence of the fact that house accommodation here does not expand *pari passu* with natural increase of population. It is preferable, therefore, to take the last census return as the basis, in the meantime, for calculating the birth and mortality rates. In any case, the increase, as estimated by the Registrar-General's method, makes only a fractional difference in the results.

Births. The total number of births amongst the civil population during the year was 504, 255 being males and 249 females. This is equal to a birth rate of 29·8 per 1,000 living of "fixed civil" population. The birth rate of the previous year was 32·23 per 1,000, and of the decennial period, 1881-90, 29·1 per 1,000.

The distribution of births according to months is shewn in Table III. Appendix and calls for no special remarks.

The excess of births over deaths † is 169. In the previous year it was 134.

There were 146 births registered during the year amongst the military population.

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* *i.e.* According to the formula $P = P^1 (1 + r)^n$. The popular method of calculating increase by excess of births over deaths would raise this number to 19,428.

† Deaths of the "fixed civil" population only are taken into account. The excess of births over deaths in 1892 was erroneously stated to be 140 in the Annual Report for that year.

Deaths. The number of deaths amongst the civil population in 1893 was 339, of which 4 occurred amongst the resident aliens. The deaths of 37 of the military population and of 28 non-residents, landed from the Bay or brought from Spain for medical or surgical treatment, were also registered during the year.

General death-rates. The general death-rates, calculated from these numbers, are 17·74 per 1000 for the "total civil," 19·81 per 1000 for the "fixed civil," and 1·82 per 1000 for the "resident alien" populations.

These death-rates are the lowest recorded in Gibraltar since death registration became compulsory in 1869.

The next lowest death-rates are those of 1884 and 1891, namely, 18·82 and 20·85 per 1000 for total and fixed civil populations respectively in 1884 and 18·95 and 20·70 per 1000 respectively in 1891.

In the previous year, 1892, these death-rates were 21·72 and 24·31 per 1000, the average for the decennial period, 1881-90, being 23·05 and 25·83 per 1000.

The corrected general death-rate for comparison with English towns is 19·43 per 1000 for the total civil population, (factor for correction = 1·09809).

The death-rate of "resident aliens" is the same as in 1892 and during the decennial period. The peculiarly low death-rate of this population is due to the fact that the ages of resident aliens are the ages of lowest mortality and any serious or chronic illness would, as a rule, necessitate their returning to their homes in Spain and elsewhere.

Quarterly mortality. The quarterly and monthly mortality is shewn in Table III, Appendix. It will be noted that there has not been much fluctuation in quarterly mortality during the year, although, as is usual here, the lowest mortality occurs in the last two quarters, namely, 16·5 per 1000 in the third and 16·1 per 1000 in the fourth quarters.

Monthly mortality. The lowest monthly mortality is that of October (13·2 per 1000), and the highest that of April (25·5 per 1000). A low mortality towards the end of autumn and a high mortality at the beginning of summer is a constantly recurring phenomenon here. For example, the average mortality of April during the decennial period 1881-90 is 4·3 per 1000 in excess of any other month. In 1893 this excess was 3·5 per 1000. In 1892 it occurred somewhat later, namely, in May, and amounted to 5·8 per 1000.

It is found that the high mortality of these months occurs mainly amongst children under 5 years of age, and is caused by an increase in the deaths from respiratory diseases. In this respect the statistics of 1893 correspond with the statistics of previous years, more than 50 °/₀ of the deaths in April and May occurring amongst children under 5 years of age.

Infantile mortality. There were 86 deaths amongst children under 1 year of age. This is equal to an infantile mortality of 170·3 per 1000 births. The infantile mortality was 183·4 in the previous year and 167·4 during the decennial period 1881-90. It is, therefore, slightly higher than the average during the year under review.

Age-group "under 5 years." The age-group 'under 5 years' accounts for 132 of the deaths. This is equivalent to a death-rate of 71·3 per 1000 living at this age-group,* or 14·2 per 1000 less than the decennial average and 7·6 per 1000 less than in the previous year. Though this decrease is satisfactory, the recorded mortality is higher than one expects to find in a community living under good sanitary conditions. It is not likely, however, that it will materially diminish, until the broad principles of hygiene become subjects of individual knowledge and practice.

Other age-groups. The death-rate of the age-group 5-10 is lower than in previous years, while the ages of school life continue to show a lower mortality than in England and Wales.

Amongst the deaths recorded in the age-group "over 75 years" there was one at the age of 101 years.

Mortality according to sex. The death-rates of the sexes according to age-groups and the monthly distribution of deaths by sexes and age-groups are shown in Table II. Appendix.

There were 161 deaths amongst males and 178 amongst females. These numbers are equivalent to a male death-rate of 18·54 per 1000 and a female death-rate of 17·09 per 1000.

In previous years, with the exception of 1886, there has been a remarkable difference between the death-rates of males and females in Gibraltar. Thus in 1892 the difference was 4·5 per 1000, in 1891 5·6 per 1000, and in the decennial period 4·6 per 1000. In 1893 it is only 1·5 per 1000. This result is accounted for, to a certain extent, by a marked decrease in the mortality of males between the ages of 25 and 45 without a corresponding decrease in the mortality of females. The "corrected" death-rates compare the mortality of the sexes more accurately. For males the corrected rate is 20·97 per 1000, (factor for correction = 1·1339), and for females 18·01 per 1000, (factor for correction = 1·0598). The difference, therefore, between the corrected death-rates of the sexes in 1893 is 2·93 per 1000, as compared with 6·6 per 1000 in 1892, 7·55 per 1000 in 1891, and 6·82 per 1000 during the decennial period 1881-90.

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* Population of the age-group at last census was 1849.

DISEASES CAUSING MORTALITY.

General remarks.

An analysis of the registered causes of death is given in Table I. Appendix, which is similar to the Tables published in previous years.

The only diseases requiring special mention here are the zymotic or specific febrile, the tubercular and the respiratory diseases. These are specially tabulated in Tables III. and IV. Appendix, where the chief meteorological *data* are also shewn.

Zymotic mortality.

The deaths from the principal zymotic diseases, shewn in Table III., amounted to 47 in number. This is equal to a "zymotic mortality" of 2·46 per 1,000 of the total Civil population as compared with 3·14 per 1,000 in 1892, 3·03 per 1,000 in 1891 and 4·88 per 1,000 during the decennial period 1881-90. There has been, therefore, a noteworthy decrease, the more so, as epidemics of dangerous infectious diseases were prevalent in the neighbourhood during the year. In no previous year, indeed, has the number of deaths from zymotic diseases been so small; and the "zymotic mortality", recorded above, is very nearly the same as the mean zymotic mortality of England and Wales during the past ten years.

This would be a fact of considerable significance in the history of sanitation in Gibraltar were it not that the numbers dealt with in one year here are too small, and it is advisable to wait until the quinquennial period can be reviewed and compared with previous quinquennial periods before drawing any definite conclusions. Yet it is important to note that the low general mortality of the year is in a great measure due to the decrease in these the chief preventible diseases.

Small Pox.

Small pox accounted for one death. Nine cases were notified. In 1892 an epidemic of this disease was raging in Tangier and four out of the five case notified here in that year were directly traced to contagion there. In 1893 the disease was epidemic in the neighbouring Spanish territory, and it appears that it was introduced there about the end of 1892 by a young girl, who returned to her home in La Tunara, a small village near Linea supplying fish to the Gibraltar market, after being in attendance on her sister, who died from Small Pox in Tangier. Shortly after returning home, she was herself seized with a malignant form of the disease and died. The usual religious ceremonies took place during the night in the hut, where the body lay, and an epidemic was soon raging in the little village, causing a high mortality amongst the children. From La Tunara the epidemic spread to Linea and from Linea to San Roque, according to the accounts of medical practitioners and of individuals, who had relatives or acquaintances in these towns suffering from the disease.

Under these circumstances it was not expected that Gibraltar would escape; but the Commissioners will remember that their attention was drawn to the fact, that the population here, unlike the population of these towns, is well vaccinated, so far as primary vaccination is concerned, and that isolation, disinfection, and re-vaccination should be relied upon as the chief measures to be taken to prevent the spread of the disease.

The history of the nine cases notified during the year proves the accuracy of these expectations. Not one of them could be traced to contagion from any previous case in Gibraltar. The first case, a vaccinated adult, was traced to Tangier, where the family had a short time previously been exposed to contagion. The second case, an unvaccinated child, occurred in March, in a family who usually resided in Linea. This led to an enquiry into the existence or otherwise of the disease there, and brought to light the facts recorded above. The third and fourth cases occurred in April and were exceedingly mild. Both were vaccinated children, exposed to contagion through servants in Linea. The fifth and six cases, in May, were young vaccinated adults, employed in eating houses, which are frequented by persons coming to Gibraltar on daily permit. One of them stated that he had actually come in contact with a person showing recent Small Pox scars and scabs. There were no more cases till August, when two cases were reported, one a vaccinated child, who had just returned from Tangier and who must have contracted the disease there; the other an adult, aged 45 years and vaccinated in infancy, who had frequented Linea exactly twelve days before the onset of the symptoms. The ninth and last case during the year was notified in November and proved fatal. The case was that of an unvaccinated adult, who had also frequented Linea twelve days before symptoms of the disease appeared. These last two cases were very severe and had evaded notification until the disease was in an advanced stage. Further allusion will be made to this and to the fact of an unvaccinated child, the second case, being in the town, in referring to the prevention of infectious diseases here.

Chicken Pox. Twenty-one cases of chicken pox were reported during the year. This is not a dangerous or fatal disease, but the necessity of notifying it arises from the fact that there is some difficulty in differentiating between it and mild or modified forms of Small Pox. Indeed during 1893 there were some instances of a confusion of terms in the nomenclature employed in notifying such forms of Small Pox. In 1883 the Medical Officer of Health, Surgeon-Major Staples, pointed out the danger of this confusion of terms and submitted statistics, which shewed that, during an epidemic of Small-Pox in that year, there were as many deaths from Chicken Pox as from Small Pox, the actual numbers being 111 reported cases of the former disease with 17 deaths and 88 cases of the latter with 17 deaths. The safer course for medical practitioners in Gibraltar to pursue is to make use of the official British nomenclature only, which does not recognize any but the two distinct diseases, Small Pox and Chicken Pox. At any rate from the preventive point of view there is no difference between Small Pox that is well marked and Small Pox that is mild or modified.

Measles. During the year, 37 cases of measles were reported, no month being exempt except January and February. The cases at first were mild and doubtful, but during the latter half of the year they were typical and severe. No deaths occurred, although there were grave fears lest an epidemic similar to the fatal epidemics of 1887 and 1890 would become prevalent. The first of the typical cases appears to have been introduced from Spain, where the disease was stated to be epidemic. Thus three cases in June were traceable to Algeciras and one in July to Linea. In the last instance the child had been living for some weeks with friends in Linea, who brought her back to her parents in Gibraltar on the first signs of illness. The case was notified as measles three days afterwards. Other cases followed in the same families and in others having communication with them.

The regulation of school attendance has doubtless been of much value in preventing the disease becoming more general, but it is found extremely difficult to control measles by sanitary action and the high percentage of families living in 1-room tenements and the consequent absence of facilities for isolation render it specially so in Gibraltar.

Scarlet Fever. There were seven cases of scarlet fever and no deaths, the disease in all cases being mild. Five of the seven cases occurred in well-to-do families having direct communication with England, where scarlet fever has been very prevalent throughout the year. Of the two remaining cases one was attacked with the disease four days after the receipt of letters and a parcel from a small village in England. On enquiry from the Medical Officer of Health for the district it was found that a severe epidemic was raging in the neighbouring town. The other occurred in a family, who received letters seven days and two days previously from relatives in England announcing the fact that scarlet fever had broken out amongst them.

Diphtheria. There were twelve cases of diphtheria reported and eight deaths. This is equal to a mortality of ·41 deaths per 1,000 living. The average mortality from diphtheria in Gibraltar is ·95 per 1,000 for the decennial period 1881-90. During 1891, 1892, and 1893 it has fallen to exactly half this number, but, notwithstanding so marked an improvement, it is still very much in excess of the standard mortality from the disease, which should not exceed ·1 per 1000. Of the fatal cases during 1893 the first was brought as a patient from Linea to the Colonial Hospital. The second was removed to Hospital from a dirty, damp and dark store, that had been converted into a living room. The third case was found in a small room, used as a milk shop, containing a disused kitchen sink directly connected with the house drains. No definite insanitary condition was found in the premises where the fourth case occurred. The fifth case occurred in a room into which a water closet opened directly. The 6th and 8th cases occurred in damp basement rooms, with brick flooring, enclosing the retaining walls of a subsoil, that was found intersected with defective drains. The 7th fatal case occurred in a better class of house, in which a soil pipe passed through one of the bed rooms. Of the four non-fatal cases three were mild and doubtful and the fourth was apparently contracted from an alien servant who came from a house in Linea, where two children had recently died of diphtheria.

Enteric fever. Eleven cases of enteric fever were reported with two deaths. This is a mortality of ·10 per 1000 living and is the lowest mortality previously recorded here from this disease. In England and Wales the enteric or typhoid mortality is ·2 per 1000, while the average in Gibraltar during the decennial period 1881-90 was as high as ·45 per 1000. The decrease, therefore, in 1893 is very marked.

One of the fatal cases occurred in a well-to-do house, in which there was a defective trap next the bed-room occupied by the patient. The other came from a building that has been practically condemned as unfit for habitation. Four out of the nine non-fatal cases occurred in the south districts, which have invariably given a greater number of enteric fever cases in proportion to population than the town districts. Most of the cases occurred in connection with defective drain traps or drains under living rooms. None of them could be definitely traced to a polluted water supply. They were all sporadic and did not occur in definite groups or at any one season of the year.

Continued fever. Four cases of continued fever were reported. One case, which was not reported, died, the cause of death being noted as "heat apoplexy," although the primary disease was distinctly a continued fever of several days duration. The case has consequently been shewn in Table I. as having died from the latter disease. Three of the four cases reported occurred amongst employés of the Eastern Telegraph Company, but nothing definite could be determined as to their origin, beyond the fact that these employés worked in an over-heated and inadequately ventilated basement room.

There is reason to believe that during the summer months the prevalence of continued fevers was considerable, and the number notified can scarcely represent, even approximately, the total number of cases that occurred in Gibraltar during the year.

Influenza. Influenza was prevalent during February, March and

April, 116 cases being reported. Many cases had pulmonary symptoms and the disease was, on the whole, less mild than in the previous year. None of the reported cases, however, proved fatal.

Erysipelas. Puerperal Fever. Eight cases of erysipelas and two of puerperal fever were reported. One of the former and both of the latter died.* Notification of the various forms of puerperal fever is still neglected. It does not, indeed, appear as yet to be recognized here that the term 'puerperal fever,' merely represents a symptom of more than one form of preventible zymotic disease.

Whooping cough. Two cases of Whooping Cough, neither fatal, were notified.

Diarrhœa. Thirty-five cases of deaths from diarrhœal diseases were recorded. This number represents a mortality of 1·83 per 1000 living. The average for the decennial period is 2·25 per 1000. In England the corresponding mortality is only 0·6 per 1000. The causes of the high mortality in Gibraltar are not definitely determined. They are probably connected with climatic conditions and those conditions of life, which bring about overcrowding of habitations and its consequent injurious influences upon health. In previous years practically half the total number of deaths from diarrhœal diseases occurred in the third quarter of the year. In 1893 this seasonal prevalence was not observed, (*vide* Table III.)

Tubercular diseases. There were 49 deaths during the year from diseases recognized as tubercular, the mortality being at the rate of 2·56 per 1000. The corresponding mortality for the decennial period 1881-90 is 3·39 per 1000. It is therefore considerably below the average in 1893, and indeed has not previously fallen so low, except in 1888, when it fell to 1·85 per 1000. If tubercular diseases, other than those of the lungs, are excluded, a so-called 'phthisis mortality' of 1·36 per 1000 is obtained in 1893, which is a fraction less than the 'phthisis mortality' of England and Wales. Special investigations were made into sanitary conditions in nearly all the cases. An hereditary history was obtained in five only. Three others followed the occupation of tobacco-choppers and apparently contracted the disease while exposed to the irritant tobacco dust; but nearly all occupied old damp 1-room tenements, defectively lighted and ventilated.

Respiratory diseases. The principal respiratory diseases, including phthisis, caused fewer deaths than usual; the total number being 81 or 4·24 per 1000 living, as compared with 6·12 per 1000 in 1892 and 6·15 per 1000 during the decennial period 1881-90. By excluding the 11 deaths registered as due to phthisis, the mortality of the other respiratory diseases during 1893 is reduced to 3·66 per 1000, which is almost exactly the same as the mortality from the same diseases in England and Wales.

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* Shewn in Table I. as deaths from pyaem

Infectious diseases from ships in harbour.

The cases of infectious and contagious diseases landed from the Bay are shewn in Table IV. They were removed to hospital with the usual precautions and gave rise to no disease in the locality.

SANITARY CONDITIONS.

Isolation of Infectious diseases.

During the year one important change was made. The segregation block of the Colonial Hospital was closed against the admission of Small Pox cases, and isolation of such cases was effected in the Small Pox Hospital at the Inundation. This action on the part of the Colonial Hospital authorities removes all grounds of complaint against insufficient isolation of such cases. It has the disadvantage of causing a greater tendency to the concealment of disease,* and in any epidemic outbreak of Small Pox the Hospital accommodation at the Inundation would require to be supplemented by tents or other improvised shelter.

Vaccination.

Certain imperfections in the working of the Vaccination Ordinance were brought to light during the year. Vaccination, it seems, can be and is evaded by British subjects, born in Gibraltar, being taken to Linea before the period has elapsed, during which certificates of vaccination must be submitted. They are consequently noted in the Vaccination Register as having left Gibraltar. After a time they are brought back and nothing is known of the fact, until perhaps a case of Small Pox is notified and the child discovered to have been residing here without having been vaccinated. As the Commissioners are aware, aliens do not receive a permit of residence until a vaccination certificate is produced; but these certificates are not required from natives of Gibraltar returning here from Spain or elsewhere. Consequently the danger of unvaccinated children residing here is considerable, as many of the poorer classes migrate to and fro between Gibraltar and Linea, and can thus readily escape vaccination. The second case of Small Pox notified during the year may be cited as an example of this.

Notification of infectious diseases.

The notification clauses have worked in a fairly satisfactory manner, but there seems need to amplify them by making them applicable to house-holders and tenants as well as to medical practitioners. Allusion has already been made to two serious cases of Small Pox, which were not notified, until the disease was far advanced.

In one no medical attendant was called in, until the patient became seriously ill; in the other a doctor was sent for only when the Sanitary Inspector had heard of the case and had begun to make enquiries regarding it. Still worse a third case escaped notification altogether and was only discovered in investigating other cases that subsequently occurred in the same family at the beginning of this year (1894).* Dual notification, *i.e.*, notification on the part of both medical attendant and house-holder, is the form of notification adopted in England, and it seems urgently demanded here. This merits the most earnest consideration of the Commissioners.

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* The last two cases of Small Pox notified during the year endeavoured to avoid removal to Hospital by concealing the disease. (See page 7).

Removal of infectious cases. The Ashford litter, obtained at the beginning of the year, was used frequently, and fully fulfilled the expectations formed of its usefulness here, and especially of the ease and efficiency with which it can be disinfected. It has been passed through the steam disinfecting apparatus several times and, since the leather straps have been replaced by webbing, it has suffered no damage of any kind from this process of disinfection.

Sewerage. With regard to the general system of sewerage nothing of importance occurred during the year, the question being still under consideration. But the Commissioners' attention has been drawn to a system of sewer flushing and disinfection, which is of great interest and may prove of importance. I refer to the "Hermite" system of flushing with electrolyzed sea-water, a system recently introduced into some continental towns and just now on its trial in England at Worthing. It is one which seems specially adapted for application here, in consequence of the necessity, in any case, of expending considerable sums here on disinfectants and the comparative cheapness of the system in a place like Gibraltar where sea or brackish water is already laid on to houses. The value claimed for it has not, however, been as yet proved.

Sanitary water supply. The question of the amount of water required for flushing and domestic purposes came prominently before the Commissioners during the year in connection with the issue of the new Bye-laws, which require house owners to supply a *minimum* quantity of 10 gallons per head daily of brackish water for general flushing and domestic purposes. In a number of houses the actual supply is very much below this standard, the consequence being that during the dry summer months there is fouling of house drains from insufficient flushing. Approximately 7,060 persons in the town and south districts were receiving during the summer of 1893 not more than 5 gallons per head daily for flushing, cleansing rooms, staircases and patios, for personal ablution, for cleaning and cooking articles of food and for washing utensils. This quantity is barely sufficient for flushing alone, but it is all that was supplied to thirty per cent. (*i.e.*, 204 out of 699) of the inhabited houses in the town districts and to twenty-five per cent. (*i.e.*, 40 out of 158) in the south districts. One house with 47 occupants had only 1½ gallons per head daily and several instances came under observation, in which the supply was as low as 2, 3, or 4 gallons per head.

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* Since writing this report other cases have occurred, which still further accentuate the danger of no legal penalty attaching to the non-notification of such cases by house-holders and tenants.

These remarks apply mainly to houses let out in several tenements. Many of the better class houses, which have few occupants, have a sufficient quantity of water from tanks and wells, and do not depend so much on the supply of brackish water, except for flushing. But for the poorer tenements the quantity required by the Bye-laws is absolutely necessary in order to maintain a proper standard of sanitation, and the fact should be recognized that the present state of affairs is insanitary and will sooner or later lead to a recrudescence of febrile diseases.

Fresh water supply. A considerable improvement was effected during the year in the fresh water supply by cutting off dangerous sources of pollution from the collecting area of the Moorish Castle Tank. Further improvements in the way of filtration must still, however, be regarded as matters requiring consideration.

House refuse. Disposal of refuse by the process of cremation came into operation here for the first time during 1893. The sanitary condition of the eastern beach and of the road to Catalan Bay has consequently been completely altered, and the former accumulations of decomposing refuse have disappeared. Some complaints have been made of the smoke from the Destructor, and it is advisable to consider measures for abating this nuisance.

The insanitary condition of house refuse receptacles, alluded to in previous reports, has not been much improved. The method of removing refuse through the streets is still imperfect and gives rise to many complaints, especially during the summer months.

Milk supply. The issue of bye-laws, which have in view the regulation of the milk supply, has apparently caused much general satisfaction. They did not come into force till towards the end of the year, but 17 samples of milk were seized for analysis up to 31st December. Twelve were found adulterated with an amount of added water, which varied from 14 to 49 per cent. One sample was adulterated by mixture with brain substance. In consequence of the conviction of the vendors of these adulterated supplies, there are already indications of a marked improvement in the quality of the milk now offered for sale.

Dairies. The registering of milk shops has not yet been commenced. Some of these, already existing, are in fair sanitary condition, but others are in need of radical reform. It is not uncommon to find the milk stored and boiled in dirty rooms and patios and in the proximity of water closets. Considerable reform has, however, been effected in removing from milk shops facilities for using water from surface wells, sunk in the neighbourhood of drains.

Goat sheds. The construction of a series of sanitary goat sheds during the year is a distinct advance in the progress of sanitation in Gibraltar, and commends itself generally to those interested in the maintenance of a high standard of public health. The old class of goat sheds, few of which now remain, is in every respect insanitary.

Sodawater manufactories and bakeries. The sanitary condition of sodawater manufactories and bakeries was systematically supervised during the year. The condition of bakeries leaves much to be desired. In some, sanitary improvements have, however, been made, and it is satisfactory to note that the old and often insanitary method of employing mules in the kneading-trough room is being abandoned in favor of gas motors.

Bread and flour analysis. Analyses of samples of bread and flour from several bakeries were made during the year. The flour was, without exception, of good quality, but the acidity of the bread was in all cases excessive, ranging from 28·98 grs. to 40·74 grs. of real acetic acid per lb. loaf. The limit of acidity in good bread does not exceed 8 grs. per lb. This excessive acidity is due to the use of an inferior method of fermentation, which could be avoided by the adoption of other methods.

Market supplies. Market supplies were satisfactory, so far as diseased articles of food are concerned, but the deficient rainfall of the year had its effect on the character of the meat supply, which was of a decidedly inferior quality. Most of the diseases noted were of parasitic origin ; cysticerci of taenia and liver flukes being by far the most frequently met with.

Sanitary defects in habitations. The sanitary improvement of habitations has not been carried on so systematically as formerly, in consequence of house to house inspections, which were commenced by order of the Commissioners in 1887, being reduced in number from August onwards. A table of the chief defects noted during the year and subsequently remedied is appended (Table V). In addition to these sanitary works 146 empty tanks were cleaned and surveyed before the commencement of the rainy season.

Bye-laws for Buildings. New bye-laws were issued during the year regarding buildings. They will greatly facilitate the work of improving the sanitary condition of habitations, especially when reconstruction is proposed. They embody and amplify the "Building Conditions" in force here for several years, and are based upon the model bye-laws of the Local Government Board.

House drains. Difficulties have been experienced in dealing with house drains. Complaints have been made of nuisances arising from the system of ventilating drains by double openings, which has been adopted here in accordance with the recommendations of the Model Bye-laws of the Local Government Board.

Such complaints are inevitable here from time to time, as indeed everywhere, and a method has been proposed of obviating all such complaints in future by having high-level inlets and outlets. Other proposed methods of avoiding the nuisance would only tend to maintain an accumulation of foul sewer air in soil pipes and house drains, which the present system is intended to remove and which is much more dangerous to health than foul air freely diluted with fresh air, even although objectionable odours are occasionally perceptible in effecting this dilution.

Some house-holders have shewn a direct opposition to having their house drains inspected, when, from the outbreak of illness or other good cause, defects have been suspected. Such opposition seems very unreasonable and the means of overcoming it merits the consideration of the Commissioners.

Overcrowding. The question of overcrowding and density of population remains practically untouched, but during the year some new buildings have been constructed, which although they will increase density of population, may to some extent relieve the overcrowding of individual tenements. It is well to note that the higher the degree of overcrowding and density of population the greater is the need of maintaining a high standard of sanitation. One-room tenements are necessities here in consequence of the lack of house accommodation and the high rents demanded, and very nearly half the families in Gibraltar occupy such dwellings. Sanitary improvements in and around these habitations, sanitary improvements, that is to say, which are carried out carefully and in detail, are more than compensated for by improved health, in the possession of which the labouring classes are able to earn more and spend less. It is of considerable importance to find that they are beginning to recognize this fact and to demand and appreciate the advantages that are to be gained from a high standard of sanitation in their surroundings.

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Gibraltar, February, 1894.

APPENDIX

OF THE

ANNUAL REPORT ON THE PUBLIC HEALTH

OF

GIBRALTAR,

FOR THE YEAR

1893.

TABLE I.

Deaths registered in Gibraltar during 1893, amongst the Civil Population, shewing diseases causing death and ages at death.

CAUSE OF DEATH.	At all ages.	Under 1 yr. of age.	1 year.	2 years.	3 years.	4 years.	Total under 5 years.	OTHER AGE-GROUPS.									
								5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75 and upwards.
General Diseases	144	59	10	7	6	3	85	2	1	1	6	6	10	7	5	11	10
Local Diseases	187	26	13	3	4	...	46	2	3	3	5	12	12	24	33	30	17
Poisons (none)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Injuries	8	1	..	...	...	...	1	...	1	...	...	...	1	2	1	1	1
Total...	339	86	23	10	10	3	132	4	5	4	11	18	23	33	39	42	28
CLASS I.																	
GENERAL DISEASES.																	
GROUP A.—*Specific febrile diseases.*																	
Small Pox	1	...	...	..	...	...	...	...	...	...	1	...	...	...	...	...	...
Diphtheria	8	...	1	1	4	2	8	...	...	...	...	...	...	...	...	...	...
Continued Fever	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Enteric Fever	2	...	...	..	...	...	...	...	...	...	1	1	...	...	...	...	...
Diarrhœa	34	23	5	1	...	...	29	...	...	1	...	...	...	...	...	2	2
Dysentery	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Erysipelas	1	...	...	...	...	...	...	...	...	...	...	...	...	..	...	1	...
Pyaemia	2	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...
Septicaemia	1	...	...	...	...	..	...	1	...	...	...	..	...	...	...	...	...
Syphilis	5	4	1	...	...	...	5	...	...	...	...	...	...	...	...	..	...
GROUP B.																	
Starvation	2	1	...	...	...	...	1	...	...	...	...	..	1	...	...	...	...
Alcoholism	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
GROUP C.																	
Immaturity at Birth	9	9	...	...	...	...	9	...	...	...	...	...	...	...	...	...	...
Malformation	1	1	...	...	..	...	1	...	...	...	...	...	...	...	...	...	...
Debility	6	6	...	...	...	...	6	...	...	...	...	...	...	...	...	...	...
Old Age	10	...	...	...	...	...	...	...	..	...	...	...	...	...	...	2	8
GROUP D.																	
Rheumatism	1	...	...	...	...	...	...	...	...	...	...	..	...	..	.	1	...
New-growths	16	...	...	...	...	..	...	...	...	...	...	...	5	2	5	4	...
Tubercle of Lungs	15	2	...	1	...	...	3	...	...	...	3	4	1	4	...	...	...
" Glands, &c.	5	5	...	...	...	...	5	...	...	.	...	...	...	...	...	...	...
" Brain	18	6	3	4	2	1	16	1	1	...	...	...	...	..	...	...	..
Ricketts	2	2	...	...	...	...	2	...	...	...	...	...	...	...	...	..	...
Anæmia	2	...	...	...	...	...	...	...	...	...	..	...	1	1	...	..	...
Total of Class I....	144	59	10	7	6	3	85	2	1	1	6	6	10	7	5	11	10

TABLE I.— *Continued.*

CAUSE OF DEATH.	At all ages.	Under 1 yr. of age.	1 year.	2 years.	3 years.	4 years.	Total under 5 years.	OTHER AGE-GROUPS. 5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75 and upwards.
CLASS II.																	
LOCAL DISEASES.																	
NERVOUS SYSTEM.																	
Congestion of Brain	4	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	1
Dropsy of Brain	3	...	1	...	...	...	1	..	...	...	...	...	..	...	1	1	...
Encephalitis	1	...	...	...	...	...	...	...	...	...	..	...	1	...	...	...	...
Softening of Brain	2	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...
Sclerosis of Cord	2	...	...	...	...	...	...	...	...	...	...	1	...	...	...	..	1
Apoplexy	10	...	...	...	...	...	...	...	. .	...	...	...	2	1	3	2	2
Paralysis	3	...	...	...	..	...	...	...	...	...	...	...	...	...	...	2	1
Hemiplegia	5	...	...	...	...	...	...	...	...	...	...	...	...	1	1	2	1
Eclampsia	1	...	...	...	...	...	...	...	...	...	1	..	...	..	...	...	...
Infantile Convulsions	9	8	1	...	...	...	9	...	..	...	...	...	...	...	..	...	...
Tetanus	2	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...
Epilepsy	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Hysteria	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Dementia	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
EAR DISEASES.																	
Abscess	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
CIRCULATORY SYSTEM.																	
Heart Disease (not specified)	6	1	...	...	...	...	1	...	...	...	...	..	1	1	2	1	...
Endocarditis	4	...	...	...	...	..	...	...	...	...	...	1	...	2	...	1	...
Pericarditis	3	...	..	...	...	...	...	...	1	...	...	1	...	1	...	...	...
Valvular Disease	6	...	...	...	...	...	...	...	...	...	...	...	..	...	3	2	1
Hypertrophy of Heart	1	...	...	...	...	...	...	...	1	...	...	...	...	...	..	...	...
Fatty Degeneration	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Dilatation of Heart	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Angina Pectoris	1	...	...	...	...	...	...	...	...	..	...	..	...	...	1	...	...
Syncope	2	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...
Atheroma of Arteries	1	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	1
Aneurism	1	...	...	...	...	..	...	...	...	...	...	...	...	1	...	...	...
RESPIRATORY SYSTEM.																	
Laryngitis	2	...	...	...	1	...	1	...	...	...	...	..	...	1	...	...	...
Bronchitis	23	5	5	...	...	...	10	...	...	...	...	...	2	..	4	5	2
Asthma	4	...	...	...	...	...	...	...	...	...	...	..	1	...	2	1	...
Congestion of Lungs	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Oedema of Lungs	1	...	...	...	...	..	...	...	...	...	...	...	...	1	...	...	...
Pneumonia	30	6	4	3	2	...	15	1	...	1	...	...	...	1	5	5	2
Phthisis	11	...	...	..	...	...	...	...	...	1	2	2	2	2	2	...	...
Emphysema	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Atelectasis	1	1	...	...	..	...	1	...	...	...	...	...	...	...	...	...	...
Pleurisy	5	2	...	...	1	...	3	...	...	...	...	...	...	1	1	...	...

TABLE I.—*Continued.*

CAUSE OF DEATH.	At all ages.	Under 1 yr. of age.	1 year.	2 years.	3 years.	4 years.	Total under 5 years.	OTHER AGE-GROUPS.									
								5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75 and upwards.
DIGESTIVE SYSTEM.																	
Teething	2	I	1	...	...	...	2	...	...	...	...	...	...	...	..	...	...
Necrosis of Jaw	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Inflammation of Parotid.	1	I	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Stricture of Oesophagus..	I	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Haemorrhage of Stomach	I	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Inflammation of Stomach	3	1	...	...	...	...	I	...	...	...	...	...	...	...	2	...	...
Ulceration of Intestine...	I	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Hepatitis	4	...	1	...	...	...	I	I	...	...	...	...	...	...	I	I	...
Cirrhosis of Liver	6	...	...	...	...	...	...	...	...	...	...	..	...	4	1	1	...
Peritonitis	3	...	...	...	...	...	...	...	...	...	1	2	...	...	...	...	...
Disease of Suprarenal Capsules	I	...	...	...	...	...	...	...	...	...	...	I	...	...	...	...	...
URINARY SYSTEM.																	
Bright's Disease	5	...	...	...	...	..	...	...	I	...	...	...	...	1	...	1	2
Cystitis	I	...	...	...	...	...	...	...	...	...	...	...	...	...	I	...	...
Stricture	1	..	...	...	...	...	...	.	...	...	...	1	...	...	...	...	...
GENERATIVE SYSTEM.																	
Hæmorrhage (post partum)..	2	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...
ORGANS OF LOCOMOTION.																	
Gangrene	1	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	1
Total of Class II....	187	26	13	3	4	...	46	2	3	3	5	12	12	24	33	30	17
CLASS III. POISONS (none).	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...
CLASS IV.																	
INJURIES.																	
Asphyxia	2	...	...	...	...	...	...	...	...	...	..	...	1	...	...	...	I
Exhaustion	I	...	...	...	...	...	...	.	...	..	...	...	...	1	..	...	...
Multiple Injuries	1	...	...	...	...	...	...	...	...	...	...	...	...	...	..	I	...
Injuries of Head	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Injuries of Neck (suicide)	I	...	...	...	...	...	...	...	...	...	...	..	...	I	...	...	...
Injuries to Blood Vessels	2	I	...	...	...	...	I	...	...	...	...	...	...	...	1	...	...
Total of Class IV...	8	I	...	...	...	...	I	...	1	...	...	...	1	2	1	1	1

TABLE II.

Sex Mortality amongst Civil Population in 1893, distributed according to Months and Age-groups.

Months.	Deaths amongst Males.												Deaths amongst Females.											
	All ages.	Under 5	5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	Over 75	All ages.	Under 5	5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	Over 75
January	14	4	...	...	...	...	2	1	1	3	...	3	18	6	...	1	...	1	2	1	1	1	4	1
February.........	9	2	...	...	...	...	...	1	...	2	1	3	21	7	...	...	1	1	...	...	2	1	6	3
March............	16	9	...	1	...	...	...	2	...	...	4	...	15	4	1	...	...	...	...	1	2	2	3	2
April	18	12	...	...	...	...	1	1	2	1	1	...	19	7	...	...	...	...	1	3	1	3	4	...
May	15	8	...	1	...	...	1	1	2	1	1	...	11	6	...	...	...	...	...	1	...	2	1	1
June	18	9	...	...	...	...	...	1	3	3	...	2	9	3	1	...	...	...	1	2	...	1	1	...
July	15	5	...	...	...	...	1	...	4	3	2	...	13	4	1	...	...	2	1	...	2	1	...	2
August	16	5	1	1	...	...	1	1	2	2	1	2	8	2	...	...	...	...	1	1	...	1	1	2
September	8	3	...	...	...	1	...	1	2	...	1	...	19	6	...	...	2	...	2	1	2	4	...	2
October	6	3	...	...	...	...	...	2	1	...	...	...	15	3	...	...	..	1	1	...	2	4	4	...
November	16	8	...	...	1	2	...	...	1	...	1	3	10	3	...	...	...	1	2	...	1	1	2	...
December	10	4	...	...	...	1	...	1	1	1	2	...	20	9	...	1	...	1	1	1	1	2	2	2
Totals......	161	72	1	3	1	4	6	12	19	16	14	13	178	60	3	2	3	7	12	11	14	23	28	15
Death-rates per 1000 living	18·5	81·4	1·2	3·3	1·0	4·5	4·1	10·0	22·8	32·4	62·5	162·5	17·0	62·1	3·4	2·1	2·4	6·1	6·9	8·6	14·0	31·3	70·0	85·2

TABLE

Monthly Distribution of Births, Deaths and Principal Diseases

Months.	Rainfall in inches.	Mean Relative Humidity.	Mean Temperature (Fahrenheit).	Total Births (Fixed Civil Population).	Deaths from all causes.		Monthly death-rates (1) per 1000 living.		Quarterly death-rates (1) per 1000 living.	
					Total Civil Population.	Fixed Civil Population.	Total Civil Population.	Fixed Civil Population.	Total Civil Population.	Fixed Civil Population.
January	3·30	76	54·5	44	32	31	20·1	22·0	19·5	21·7
February	1·32	73	57 9	37	30	30	18·3	21·3		
March	5·64	77	60·1	39	31	31	19·5	22·0		
April	2·85	71	64·3	42	37	36	23·2	25·5	18·8	21·0
May	·61	65	69·4	51	26	26	16·3	18·4		
June	·66	63	74·2	38	27	27	16·9	19·1		
July	·00	70	76·7	51	28	27	17·5	19·1	16·5	18·2
August	·02	68	79·4	39	24	23	15·0	16·3		
September	1·52	65	74·2	43	27	27	16·9	19·1		
October	1·09	73	67·1	44	21	21	13·2	14·9	16·1	18·2
November......	6·96	74	59·9	29	26	26	16·3	18·4		
December......	2·29	73	56·5	47	30	30	18·3	21·3		
Totals for the year, with annual means and death-rates.	26·26	71 (mean)	66·2 (mean)	504	339	335	17·7 (mean)	19·8 (mean)	17·7 (mean)	19·8 (mean)

(1) Calculated on a Total Civil Population of 19100, and a Fixed Civil Population of 16906.

(2) Includes one case of dysentery

III.

causing death amongst the Civil Population of Gibraltar during 1893.

Principal Zymotic (1) Diseases.		Deaths from Principal Zymotic Diseases.								Tubercular Diseases (3).		Respiratory Diseases (4).	
Total Deaths.	(1) Quarterly death rates per 1000 living.	Small Pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping Cough.	Enteric Fever.	Continued Fever.	(2) Diarrhœa.	Total Deaths.	(1) Quarterly death-rate per 1000 living.	Total Deaths.	(1) Quarterly death-rates per 1000 living.
3	1·67	...	...	...	...	...	...	...	3	3	2·51	5	5·86
4		...	...	...	...	...	...	...	4	3		8	
1		...	...	...	1	...	...	...	...	6		15	
1	2·93	...	...	...	1	...	...	...	...	5	2·72	12	4·39
6		...	...	...	1	...	...	...	5	6		5	
7		...	...	...	...	...	...	...	7	2		4	
4	2·72	...	...	...	...	...	2	...	2	6	2·51	5	2·72
2		...	...	...	1	...	...	1	...	3		4	
7		...	...	...	...	...	...	...	7	3		4	
3	2·51	...	...	...	1	...	...	...	2	1	2·51	4	3·97
3		1	...	...	...	...	...	...	2	7		7	
6		...	...	...	3	...	...	...	3	4		8	
47	2·46 (mean)	1	...	...	8	...	2	1	35	49	2·56 (mean)	81	4·24

(3) Includes Phthisis and diseases returned as Tubercular.

(4) Includes diseases returned as Bronchitis, Pneumonia, Phthisis, Tubercle of Lungs, Congestion and Oedema of Lungs.

TABLE IV.

Infectious and Contagious Diseases notified during 1893, under provisions of Section 10, "Medical Ordinance, Gibraltar, 1885."

Months.	Cases occurring amongst the Civil Population.																						Cases landed from the Bay.							
	Enteric Fever.		Coutin'd Fever.		Scarlet Fever.		Puerperal Fever.		Measles.		Influenza.		Diphtheria.		Erysipelas.		Whooping Cough.		Small Pox.		Chicken Pox.		Enteric Fever.		Measles.		Influenza.		Small Pox.	
	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died
January	1	...	2	...	...	...	...	...	...	...	...	...	...	...	2	1	...	...	...	...	1	...	1	...	...	...	...	...	...	...
February...	1	...	1	...	...	...	...	..	2	...	10	...	...	...	2	...	...	...	1	...	2	...	1	...	...	...	1	...	..	...
March	2	...	...	...	...	...	...	...	3	...	92	...	2	2	...	...	...	...	1	...	1	...	...	...	...	...	...	...	1	1
April	...	...	...	...	1	...	...	...	6	...	14	...	1	1	...	...	...	...	2	...	3	...	1	...	...	...	...	...	...	...
May	...	...	...	...	2	...	...	...	1	...	...	...	...	...	...	...	...	...	2	...	1	...	1	...	...	...	...	...	...	...
June	1	...	...	...	..	...	...	...	4	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
July	2	2	...	...	...	...	...	...	5	...	...	...	1	...	...	...	2	...	...	...	5	...	1	1	...	...	...	...	...	
August	...	...	...	1	1	...	...	...	9	...	. .	...	1	1	...	...	...	...	2	...	3	...	1	...	...	...	...	...	...	...
September	1	...	...	...	1	...	1	1	4	...	...	...	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
October	1	...	1	...	1	...	...	...	1	...	...	...	2	1	1	...	...	...	...	...	1	...	...	...	1	...	..	...	...	...
November	1	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	1	1	3	...	...	...	...	...	...	...	...	...
December	1	...	...	...	1	...	1	1	2	...	...	...	3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	11	2	4	1	7	...	2	2	37	...	116	...	12	8	8	1	2	...	9	1	21	...	6	1	1	...	1	...	1	1

TABLE V.

Statement of the chief sanitary defects dealt with amongst the civil habitations of Gibraltar during 1893.

Description of Defect.	Number of Houses in which defect was noted.
A.—WATER SUPPLY.	
1. Collecting area polluted	30
2. Mouth or inlet of tank exposed to pollution	35
3. Water in tank impure	18
4. Overflow of tank directly connected with drain	1
5. Tanks deficient of proper means of drawing water	1
6. Insufficient supply of water for flushing, &c.	32
7. Wells generally insanitary	5
8. Well water highly polluted	3
B.—SEWERAGE.	
1. Insufficient W. C. accommodation	6
2. Insufficient means of flushing	5
3. Situation of W. C. insanitary	29
4. Soil pipes leaking	15
5. Soil pipes unventilated	3
6. Fittings, &c., insanitary	53
7. House drains defective	18
8. Rain gutter pipes connected with drains	7
9. House drains untrapped	1
10. Ventilation of W. Cs. insufficient	60
C.—KITCHENS.	
1. Sinks untrapped	17
2. Sinks directly connected with drains	18
3. Without flues	13
4. Accommodation deficient	13
D.—LIVING ROOMS.	
1. Dirty	2
2. Damp	25
3. Overcrowded	8
4. Badly lightly and ventilated	59
5. Generally unfit for habitation	11
6. Roofs leaking	21
7. Drains under floors	6
E.—YARDS.	
1. Badly paved	25
2. Badly ventilated	14
3. Blocked with stores and refuse	17
4. Surface drain traps defective	39
5. Fouled by keeping of animals	6
F.—PREMISES GENERALLY.	
1. Unfit for habitation	4
2. In bad repair	12
3. Deficient of refuse receptacles	53
G.—GOAT SHEDS.	
1. Dirty or insanitary	4
2. Occupied as human habitations	2
Total	691